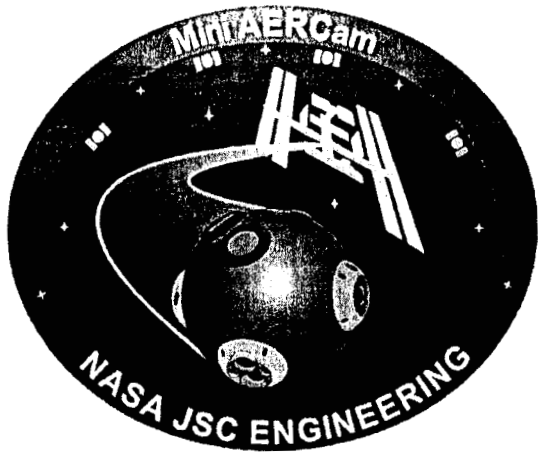

Spirent Federal Systems Simulator Users' Conference

NASA Johnson Space Center
Mini AERCam testing with the GSS6560

April 6 & 7, 2004

GPS Based Programs at NASA-JSC

- Several Detailed Test Objectives (DTOs) flown on STS missions featuring GPS as the primary focus of the DTO:
  - GANE on STS-77
  - RGPS RME on STS-80
  - ARPK on STS-84 & STS-86
  - SIGI DTOs on STS-88, STS-101 (SOAR) and STS-108 (CRV)
- Shuttle program switching to GPS receivers for navigation sensor
- International Space Station baselined with GPS based navigation and attitude determination. Operational since 2002.
- Crew Return Vehicle featured GPS based navigation.
- Mini Autonomous Extravehicular Robotic Camera (AERCam) relies on precise real-time relative GPS for relative navigation.

Shuttle GPS Testing

- Shuttle's Rockwell Collins "MAGR-S" tested regularly in the Shuttle Avionics Integration Laboratory (SAIL) before any Shuttle flight
- Shuttle SIGI Testing
  - Shuttle SIGI contains a Rockwell Collins GEM-3 GPS receiver and Honeywell INS
  - Was considered a candidate for replacing current Shuttle IMUs
  - Successfully attained accurate STS ascent simulation runs using an open-loop architecture.
  - Achieved stable STS ascent runs with a closed-loop simulation.
  - Supported short duration STS orbit and entry runs.